The Year 2000:
An Interim Status Report on the Preparedness of Regulated Utilities

Prepared by
The Tennessee Regulatory Authority
January, 1999

Introduction

The Year 2000 problem (referred hereafter as "Y2K") is probably one of the most consuming technology issues today. Coverage by the news media has been extensive on this issue. Y2K is often met with either dread and panic or ambivalence. Neither panic or avoidance, however, will address the potential problem caused by the coming new millennium. The problem, also referred to as the "Millennium Bug," is real and has the potential of causing disruptions if prudent actions are not taken by both the public and private sectors.

The Y2K problem is centered around computer operations, and can be traced to this technology's early development. In the formative stages of electronic information systems technology, computer storage devices and programming were expensive. In an effort to reduce developmental costs, the computer industry only allotted two digits for the year field. For decades this limitation caused no problems. Attempts to introduce the 21st Century, however, has caused many older computer systems, including many imbedded computer chips, to malfunction. The adjustment of the year field to "00" has caused some computers to read this date as 1900 instead of 2000 which prompted the systems to shut down. This is the Y2K problem.

With the widespread use of computer technology by the private and public sectors, attention has been rightfully given to Y2K issues. One of the industries that heavily depends upon computer technology is the utility sector. Everything from making a basic telephone call to turning on gas heat involves computer systems that rely on date-coded technology that is susceptible to Y2K problems.

With the dependency of many utility operations tied to computer systems, utility disruptions caused by Y2K have the potential of adversely affecting society. Under the statutory authority of T.C.A. § 65-4-114, the Tennessee Regulatory Authority (TRA) has developed a plan to evaluate the level of preparedness of utilities under its jurisdiction for the new millennium. Under Public Chapter 65, the TRA regulates only two (2) types of utilities: for-profit utilities such as BellSouth, and natural gas distribution systems including not-for-profit gas systems. The following Report focuses on the utilities under the TRA jurisdiction. For companies not regulated by the TRA under state law, see Appendix A.

This Report has several objectives. One objective is to inform the Legislative and Executive Branches of state government as to the status of utility readiness for the Year 2000. Another objective is to assert the significance of this issue and encourage utilities and their member organizations to continue working toward Year 2000 compliance.

The Report is divided into two (2) parts. The first part explores the level of readiness of regulated utilities for Y2K. The regulated utilities examined in this part are inclusive of for-profit utilities operating in Tennessee. The second part examines all natural gas distribution systems in the state. These systems are under the TRA jurisdiction for gas safety purposes only.

The submission of this Report will not conclude the activity of the TRA regarding this important issue. Ensuring that utilities have a compliance plan is just the first part of addressing the Y2K problem. As the industry implements their plans and begins to tests their systems, the TRA will have an important role in evaluating the effectiveness of these plans. Shortly after reviewing the results of Y2K testing by utilities, we will submit another report to the legislative and executive branches of state government. We expect this subsequent report to be submitted during the fourth quarter of 1999.

EVALUATION OF YEAR 2000 PREPAREDNESS OF THE REGULATED UTILITY INDUSTRY IN TENNESSEE

Part I

Part 1 of this Report will evaluate the readiness of the state's utilities as defined by T.C.A. § 65-4-101(a). Under this statute, these utilities are generally defined as for-profit utilities that are under the jurisdiction of the TRA for purposes of service and rate regulation. This category of utilities (hereafter referred to as "regulated") includes companies such as BellSouth, AT&T, Nashville and Chattanooga Gas Companies, Kingsport Power Company and Tennessee American Water Company. A total of 46 utilities operating in Tennessee from Bristol to Memphis fit under this definition.

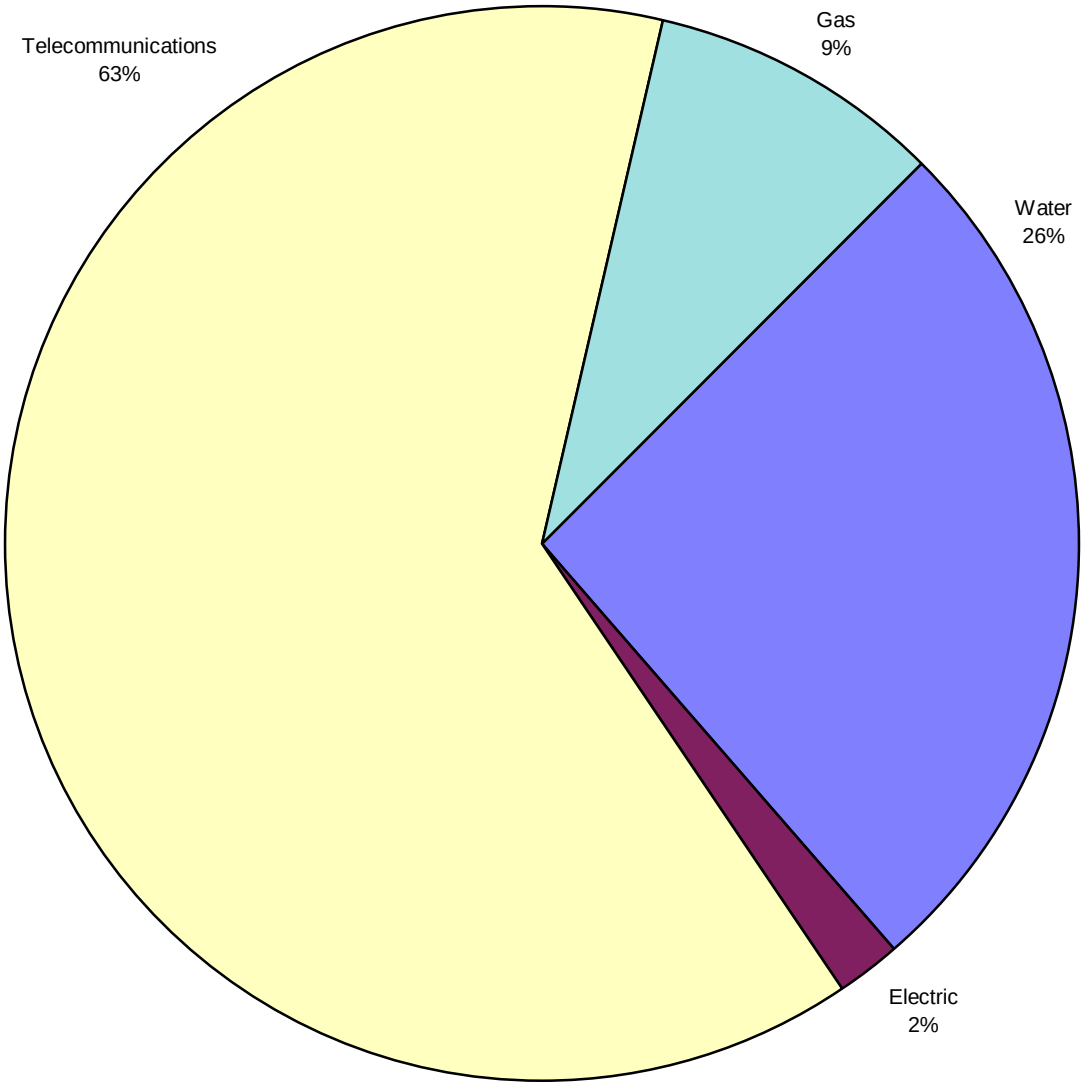
The methodology used to evaluate the preparedness of the regulated utility sector was a survey which was mailed to each regulated utility. The survey questions are listed below.

Y2K Survey of Regulated Utilities

1. Are your company's systems Year 2000 compliant? If not, please identify what systems are not compliant and the date compliance is expected.
2. Does your company foresee any service problems or outages resulting from the Year 2000? Explain if response is yes.
3. What steps is your company taking to ensure that your systems are Year 2000 compliant? Please provide a schedule of events leading to making your systems fully Year 2000 compliant.
4. Does your company plan to conduct any testing to ensure that your systems are Year 2000 compliant? If yes, please provide the estimated date for testing. Will your customers be affected by outage time for testing?
5. What is your estimate of the cost to ensure your systems are Year 2000 complaint?

Of the 46 companies sent surveys, 11 were incumbent local exchange carriers (ILECs), five were interexchange carriers (IXCs), 13 were competing local exchange carriers (CLECs), four were gas utilities, one was an electric utility and 12 were water utilities. Below is a graph depicting the sectors surveyed.

Sectors Surveyed



The surveys were mailed on June 22, 1998 and a follow-up reminder was sent on July 27, 1998. August 11, 1998 was established as the deadline to hear from companies who failed to respond to the survey. On October 5, 1998 the survey was sent to an additional 11 small water companies, one of which was determined to be no longer in operation. The surveys had a deadline response date of October 12, 1998. In total forty-two (42) companies responded to the survey. Below is a list of companies sent the survey and whether they responded.

Companies Responding to Survey

Century Telephone Enterprises, Inc.
Millington Telephone Company
LDDS Worldcom
Metropolitan Fiber Systems
Brooks Fiber Properties
Chattanooga Gas Company
Cleveland Natural Gas Company
Intermedia Communications
United Cities Gas Company
United Telephone Southeast
TDS Telecom
Citizens Communications Co.
ITC DeltaCom
Tennessee American Water
MCI Metro Access Transmission Services, Inc.
e.spire Communications, Inc.
United Telephone
Tennessee Water Service, Inc.
Riviera Utilities of Tennessee, Inc.
Cartwright Creek
Lynnwood Utilities
Nextlink Tennessee
ATS Network, LLC
Comm. Depot. Inc.
Loretto Telephone Company
Southeast Telephone
Winstar Telecommunications
BellSouth
AT&T
Sprint Communications
Telephone Electronics Corporation
Ardmore Telephone Company
Nashville Gas Company
Time Warner Communications
MCI WorldCom Inc.
Kingsport Power/AEP
LCI International Worldwide Telecom
ICG Telecom Services, Inc.
On-Site Systems, Inc.
Aqua Water
Foothills Properties
Shiloh Utilities

Companies Not Responding to Survey[1]

Hyperion of Tennessee, Inc.
Antioch Water
Newport Resort Water System
Sequatchie Water Works, Inc. (Not in Operation)

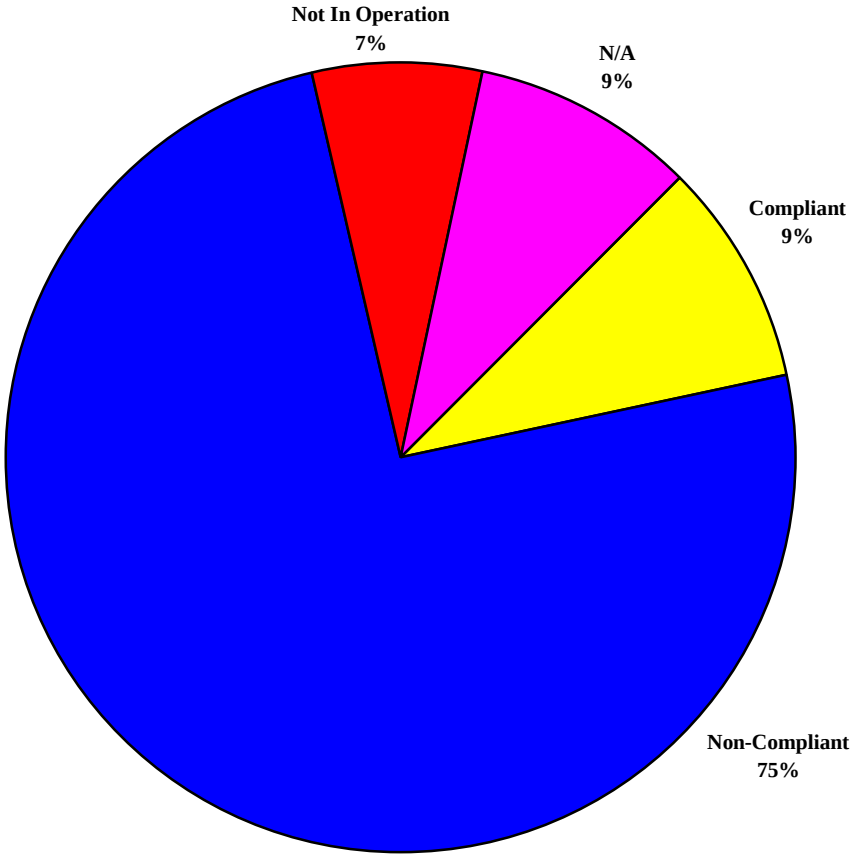
The remaining sections of Part 1 of this Report will describe the results of the survey. The results of each question will be reviewed along with some analysis. Part 1 will conclude with a summary of the results of the survey.

[1] The TRA is continuing to ascertain whether these utilities are preparing for Y2K. Additionally, a letter from the TRA Directors was sent to these companies urging them to respond to the Y2K survey.

1. Are your company's systems Year 2000 compliant? If not, please identify what systems are not compliant and the date compliance is expected.

Two (2) companies responded that they are not currently in operation, one (1) was determined to be no longer in operation through research and four (4) companies responded that their systems are currently Year 2000 compliant. Four (4) companies responded that the Y2K issue was inapplicable because their operations do not use electronic systems, these comprise the majority of the small water companies responding to the survey. Finally, thirty-two (32) companies responded that either all or part of their systems are not Year 2000 compliant. As indicated on the graph below, 75 percent of the companies responding indicated that at least one of their systems is not Y2K compliant.

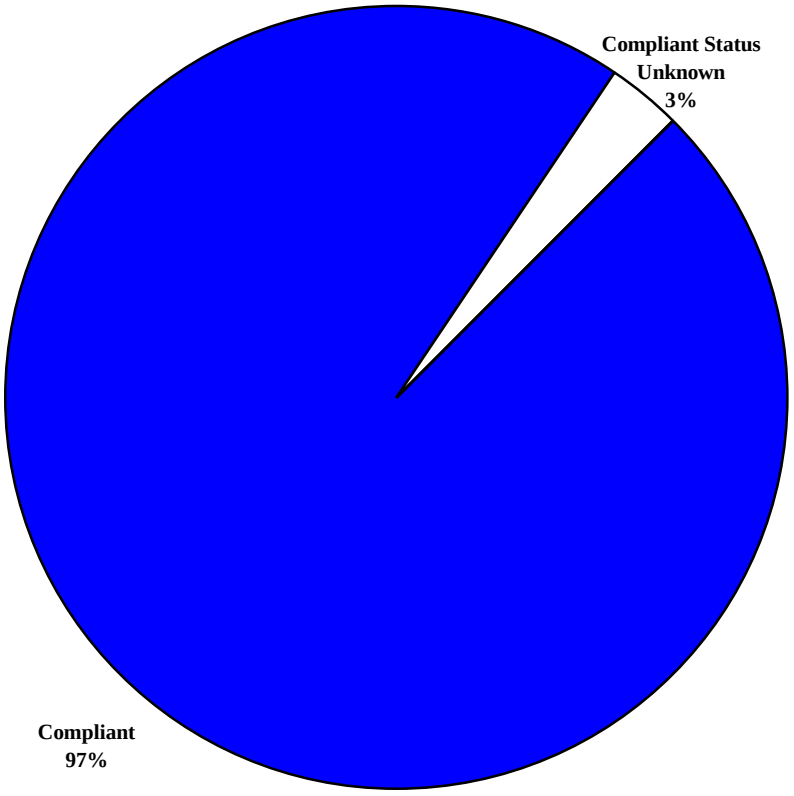
Y2K Compliance Status
As of 10/15/98



While the Y2K picture for regulated utilities appears discouraging as of October 15, 1998, the prospect is more encouraging as we move toward the Year 2000. Regulated utilities appear to

recognize the gravity of system non-compliance and will begin taking steps to address the potential problem during late 1998 and 1999. For example, many utilities have informed us that they have vigorous plans to bring their systems into Y2K compliance during the fourth quarter of 1998. Of the thirty-two (32) companies reporting the lack of full Y2K compliance as of October 15, 1998, eight (8) have goals of achieving full compliance by the end of 1998, fifteen (15) have goals of achieving full compliance by mid-1999, six (6) companies target the third quarter of 1999 for full compliance, and two (2) companies expect compliance sometime before December 1999. One (1) new competitive local exchange telephone company was hesitant to offer a date for full compliance; observing that some Y2K issues may not be detected until January 1, 2000. All incumbent local exchange carriers (ILECs) indicated that their critical and non-critical systems will be ready for the Year 2000.

Y2K Compliance by 12/31/99



Notably, priorities among all utilities that responded include securing compliance of their billing/revenue and customer service systems, as well as other mission-critical systems. A priority specific to telecommunication companies was securing the Year 2000 readiness of their switching networks. BellSouth, the largest telecommunications provider in the state, estimates that all its systems, both critical and non-critical, will be Y2K compliant by June 1999.

2. Does your company foresee any service problems or outages resulting from the Year 2000? Explain if response is yes.

Few companies project any service problems resulting from the coming of the Year 2000. Of the thirty-two (32) relevant companies, twenty-nine (29) responded that they did not foresee any service problems or outages resulting from the Year 2000. One company, however, was reluctant to assert that there would be no service problems since the issue could not be verified until January 1, 2000. MCI WorldCom, accounting for two (2) companies in the survey, maintains that service problems ranging from disruption of service to incorrect customer billing may occur due to interfacing with other entities.

3. What steps is your company taking to ensure that your systems are Year 2000 compliant? Please provide a schedule of events leading to making your systems fully Year 2000 compliant.

All thirty-two (32) companies reported that they have outlined specific courses of action to address Year 2000 issues, and to ensure that their systems are Year 2000 compliant by the turn of the century.

Key aspects of all Y2K preparedness projects reported include some form of assessment, remediation, replacement or updating of non-compliant systems and testing. One strategy often cited by utilities to identify Y2K issues is the use of outside resources. For example, in order to properly identify Y2K issues, many utilities indicated that they have enlisted assistance from consulting firms and hardware/software vendors to further warrant the aptness of their computer systems.

Atmos Energy Corporation, parent company to United Cities Gas Company, established and staffed its Year 2000 Project in 1996. The enterprise-wide project consists of a project oversight team at Atmos, which includes six employees representing Finance, Legal, Information Technology, Risk Management and Internal Audit departments of the company. The mission of the team is to identify and analyze company-wide systems, facilities, and processes for Year 2000 compliance, and make the necessary corrections if needed. Some accomplishments of the project to date include conducting an enterprise-wide awareness program, initiating functional and business unit reviews to identify, assess, and plan compliance strategies; and completing a prioritized inventory of application and system software, equipment and processes that may have a Y2K problem.

4. Does your company plan to conduct any testing to ensure that your systems are Year 2000 compliant? If yes, please provide the estimated date for testing. Will your customers be affected by outage time for testing?

One important element of any Y2K compliance strategy is systems testing. Testing helps ensure that the corrective steps taken are sufficient to prevent systems failure. Thirty-one (31)

of the companies responded that they have established firm testing dates for both critical and non-critical systems.[2]

Testing dates among thirty-one (31) of the thirty-two (32) relevant companies that responded range from December 1998 to December 1999, with the preponderance taking place in 1999. Companies that expect compliance by the end of 1998 will test throughout 1999. American Electric Power maintains that its dates for testing are being determined on an application and component system basis, and, therefore, provides no testing dates. Some companies have expressed that testing and monitoring will continue beyond the passage of the millennium. Thirty-two (32) companies reported that they do not expect customers to be affected by outage time for testing. Listed below is a summary of the Y2K compliance dates submitted by regulated utilities for their critical and non-critical systems.

COMPANY	COMPLIANCE DATE MISSION CRITICAL SYSTEMS	COMPLIANCE DATE NON-MISSION CRITICAL SYSTEMS
Sprint Long Distance	12/98	6/99
United Telephone Southeast	12/98	6/99
ICG Communications, Inc.	6/99	6/99
Time Warner	9/99	9/99
TEC	7/99	7/99
Millington Telephone Co.	6/99	6/99
Ardmore Telephone Co.	4/99	4/99
TDS Telecom	9/99	9/99
Amer. Electric Power	6/99	9/99
Winstar	NO DATE PROVIDED	NO DATE PROVIDED
ITC DeltaCom	4/99	4/99
Citizens	6/99	6/99
Chattanooga Gas	12/98	12/98
Cleveland Natural Gas	12/98	by 12/99
Nashville Gas	12/98	by 12/99
United Cities Gas	12/98	7/99
Intermedia	12/98	12/98
AT&T	12/98	12/98
Century	12/98	6/99
TN. Amer. Water	12/98	6/99
LDDS WorldCom	12/98	12/98
Brooks Fiber Prop.	12/98	12/98
Metro Fiber Systems	12/98	12/98

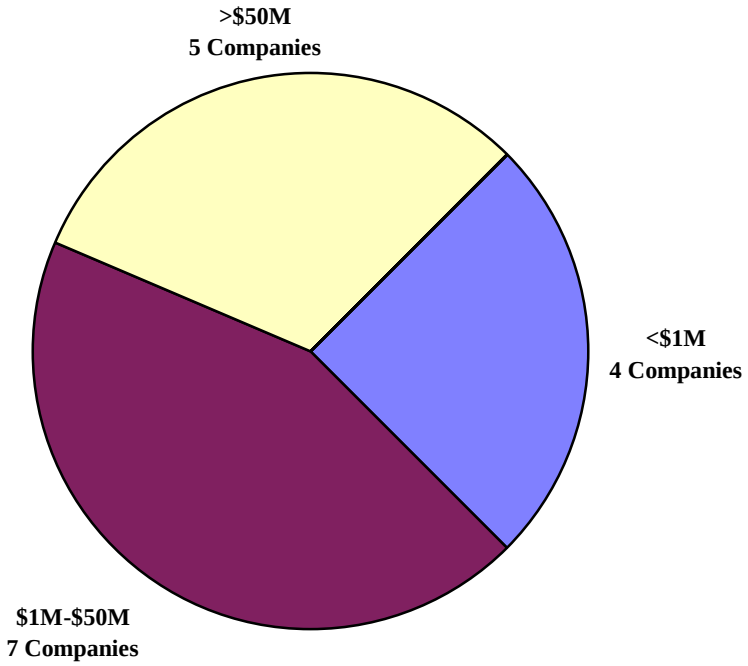
[2] A critical system is one that is required for the utility to provide essential services, while a non-critical system is one that is ancillary or complimentary to the providing of service. An illustration of this distinction for a telephone company is that a critical system is required for subscribers to complete or receive telephone calls, while a non-critical system is required for the subscriber to receive an accurate telephone bill.

BellSouth	12/98	6/99
MCI WorldCom	3/99	6/99
MCImetro Access	3/99	6/99
United Telephone Co.	6/99	6/99
e.spire	9/99	9/99
LCI International	6/99	6/99
Nextlink Tennessee	12/98	12/98
Comm Depot	Not In Operation	Not In Operation
ATS Network, LLC	Not In Operation	Not In Operation
Sequatchie Water Works, Inc.	Not In Operation	Not In Operation
Loretto Telephone Co.	Compliant	Compliant
SouthEast Telephone	Compliant	Compliant
On-Site Systems, Inc.	Compliant	Compliant
Cartwright Creek	Compliant	Compliant
Aqua Water	Inapplicable	Inapplicable
Foothills Properties	Inapplicable	Inapplicable
Lynnwood Utilities	Inapplicable	Inapplicable
Shiloh Utilities	Inapplicable	Inapplicable

5. What is your estimate of the cost to ensure your systems are Year 2000 complaint?

According to the responses of the regulated utilities, the financial cost for utilities to become Y2K compliant is difficult to estimate. Only sixteen (16) of the forty-one (41) companies provided an estimate of the cost to become Y2K compliant. Of the regulated utilities submitting cost estimates, Y2K expenses are likely to be significant. Cost estimates from these companies ranged from a low of $100,000 to a high of $350 million. Companies that do not expect spending to reach $1 million are Ardmore Telephone Company, Nextlink Tennessee and Tennessee American Water Company. ICG Communications, Inc. indicated that the costs to ensure Y2K compliance are not expected to have a material impact on the Company's financial condition or results of operation. No cost estimate was provided by ICG Communications, Inc. All other utilities that responded expect costs to exceed $1 million. MCI WorldCom and BellSouth predicted the highest cost which is expected to exceed $100 million dollars. Below is a graph illustrating the variation of cost estimates for regulated utilities to become Y2K compliant.

Estimated Cost of Y2K Compliance



Total Estimated Cost $705,782,000

Conclusion

This evaluation of the preparedness of the regulated utility industry in Tennessee for the Year 2000 provides an indication that significant measures are being planned to ensure systems compliance. Moreover, the "millennium bug" issue appears to be of great concern to all of the responding utilities. Perhaps their concern is due to the potential negative impact non-compliance will have on their systems, thus affecting company reputation and revenues. Nonetheless, the fact that most companies have responded that they have made a concerted effort by establishing working groups within their own organizations to specifically deal with Y2K issues, speaks well for the regulated utility industry in Tennessee. Plans to address the Year 2000 appear to be in place. Implementation of the industries' plans, however, will require the continued attention of the TRA in the months ahead. The additional monitoring by the TRA will help ensure that the steps proposed by the regulated utilities are adequate to prevent utility problems from occurring on January 1, 2000.

As stated above, efforts to address Y2K issues appear to have a more individual company focus. A telephone survey of utility associations such as the Tennessee Telecommunications Association, the Tennessee Electric Co-op Association, the Tennessee Association of Utility Districts, the Tennessee Gas Association and the Tennessee Municipal Electric Power Association failed to reveal any plans to conduct industry-wide forums or workshops for its members on Y2K problems. We encourage these member organizations to support the

individual efforts of its members in addressing the Y2K problem. These associations can play an important role by providing technical workshops, or other such forums, where experts can educate their members on strategies on how to solve Y2K issues. These efforts can be especially helpful to smaller more rural utilities that may not have the expertise in house to address Y2K issues.

Finally, in regard to the utilities that failed to respond to the survey, it is expected that they will take action to address the Y2K issue, if applicable. For the issue is not one with which compliance is voluntary to ensure a smooth operation beyond the turn of the century, but mandatory.

EVALUATION OF YEAR 2000 PREPAREDNESS OF THE TENNESSEE NATURAL GAS INDUSTRY

Part II

This section of the report will focus on the natural gas distribution systems in Tennessee. In an attempt to gauge the Year 2000 preparedness of the Tennessee natural gas distribution industry, the TRA distributed a survey to all of Tennessee's 194 natural gas operators. An operator is an organization that distributes or sells natural gas to an ultimate consumer or another distributor. The operators included in this survey include Municipalities, Utility Districts, Private Companies, Master Meter Operators, Direct Sales Customers, and Intra-State Transmission Companies. With 171 operators responding, the survey achieved an 88% response rate.

The survey (attached) polled the operator first on whether or not their operations influence the nation's infrastructure, either directly or indirectly (see A.1. Survey Applicability). Next, the operator was asked whether or not they have systems that may be affected by the Year 2000 (2-digit date code) problems which might have an effect on the reliability of their operations or business.

If the operator answered YES to the above questions, he was asked to further complete the survey. The survey attempts to detail the operator's progress at meeting Year 2000 compliance of their operating systems.

"Year 2000" Survey Analysis

Chart A.1. Survey Applicability: This chart illustrates that nearly 60% of all natural gas operators have operating systems that would indeed be affected by the "Year 2000 Problem." Respondents claiming that they would not be affected were typically small gas systems or master meter operators. These operators either have no computers at all or have distribution systems that are not directly controlled by computers.

Chart A.2. Year 2000 Action Plan: This chart clearly indicates that a majority of those affected by the "Millennium Bug" currently have plans that comprehensively address each of the seven major areas listed in the survey.

Chart B.2. Issue Longevity: This chart graphs how long the affected operators have either been assessing the problem or working on its resolution. Results show that 56% of respondents claim to have spent more than one year addressing their computer software needs; 42% have spent at least a year addressing their computer hardware needs; 32% have spent at least a year looking at both their supply chain business partners and at developing contingency plans. An average of only 8.5% indicate that they have not yet started dealing with the "Year 2000 Problem."

Chart B.3. Stage and Status: This chart gauges the status of the operators' contingency plans for the listed areas of interest. The results seem to indicate that the majority of affected operators do not see the need for contingency plans in these areas. Perhaps this is due to a belief that their systems will be fully compliant by the Year 2000. An average of 35% are currently developing contingency plans for one or all of these areas. An average of only 11% have actually completed a contingency plan for one or all of the listed areas of interest.

Chart B.4. Functionality Status: This chart attempts to measure the status of the operators' contingency plans on a basis of business area functionality. The responses to this section seem to mirror the previous section on contingency plans in that most respondents reported that they do not have contingency plans for these areas.

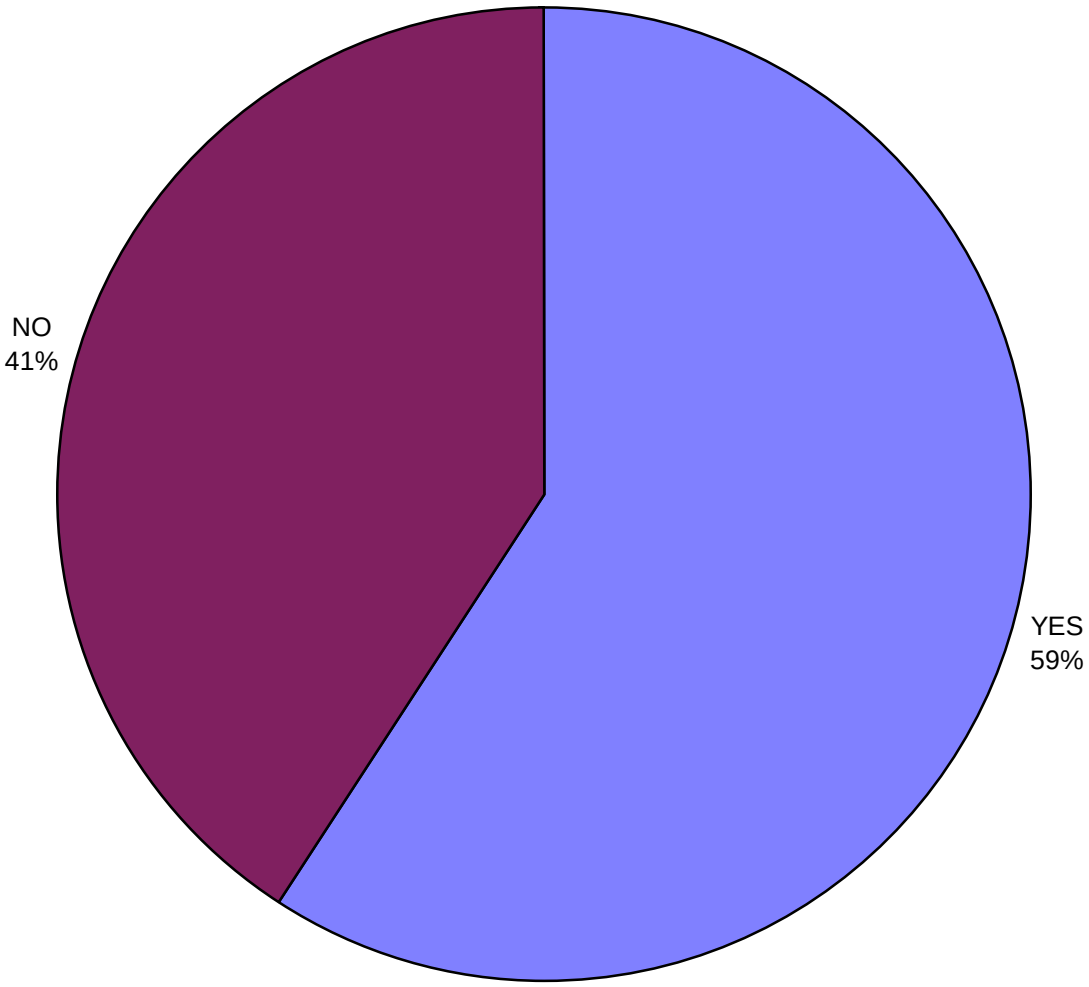
Conclusion

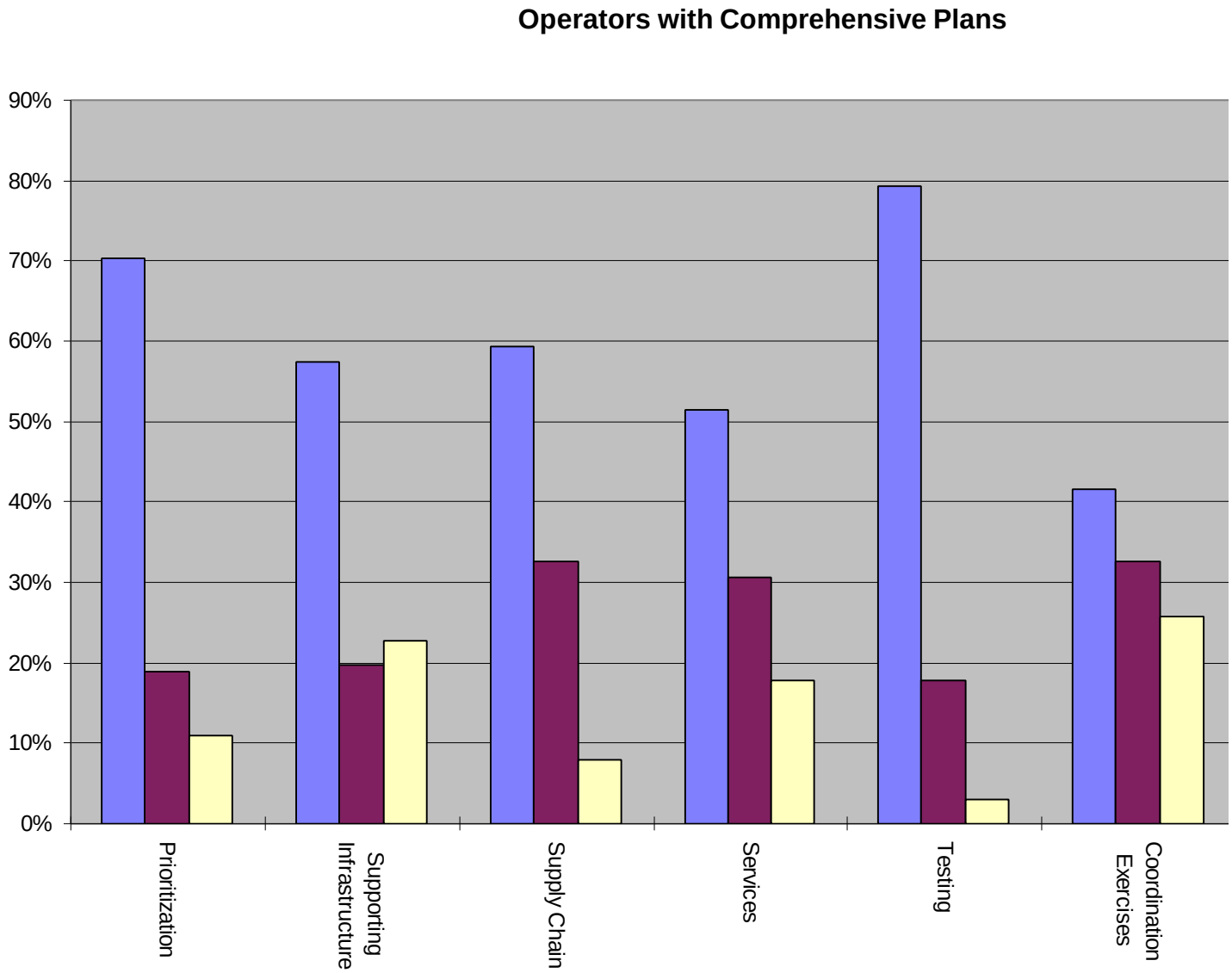
This survey of the preparedness of the natural gas industry in Tennessee for the Year 2000 indicates that most operators are aware of the potential problem and are currently taking steps toward compliance. Many smaller operators have simply updated their entire systems by purchasing new operating equipment such as hardware and software. Others are attempting to resolve the issue with just new software or software "patches." Estimated costs to bring systems into compliance for many medium to large distribution operators will range from as low as $3,000 to as much as $100,000.

Most of the Year 2000 compliance activity within the natural gas industry has occurred within the previous two years. However, dramatic increases towards compliance have occurred within the past six to ten months. At the very least, the results of this survey indicate that most operators take the Y2K issue seriously and are working towards compliance.

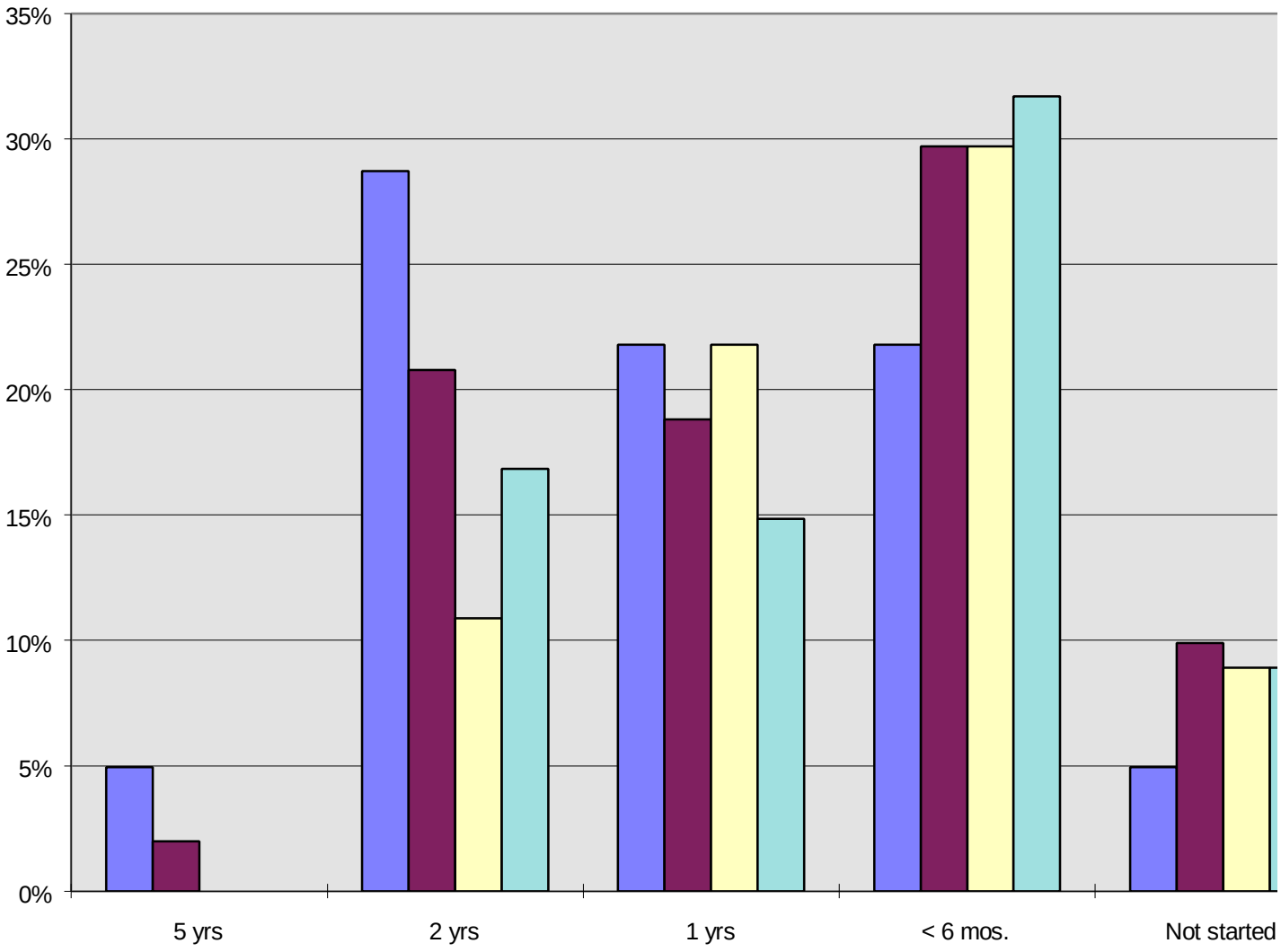
Finally, most natural gas operators are confident that the compliance deadline will be met by the end of this year. And some of the larger operators are appropriately developing contingency plans to prepare for systems (theirs or those dependent upon them) that may not be compliant when needed. Overall, however, we are optimistic that the natural gas industry will maintain its diligence towards ensuring that all systems are operationally prepared and will continue to make progress towards total compliance by December 31, 1999.

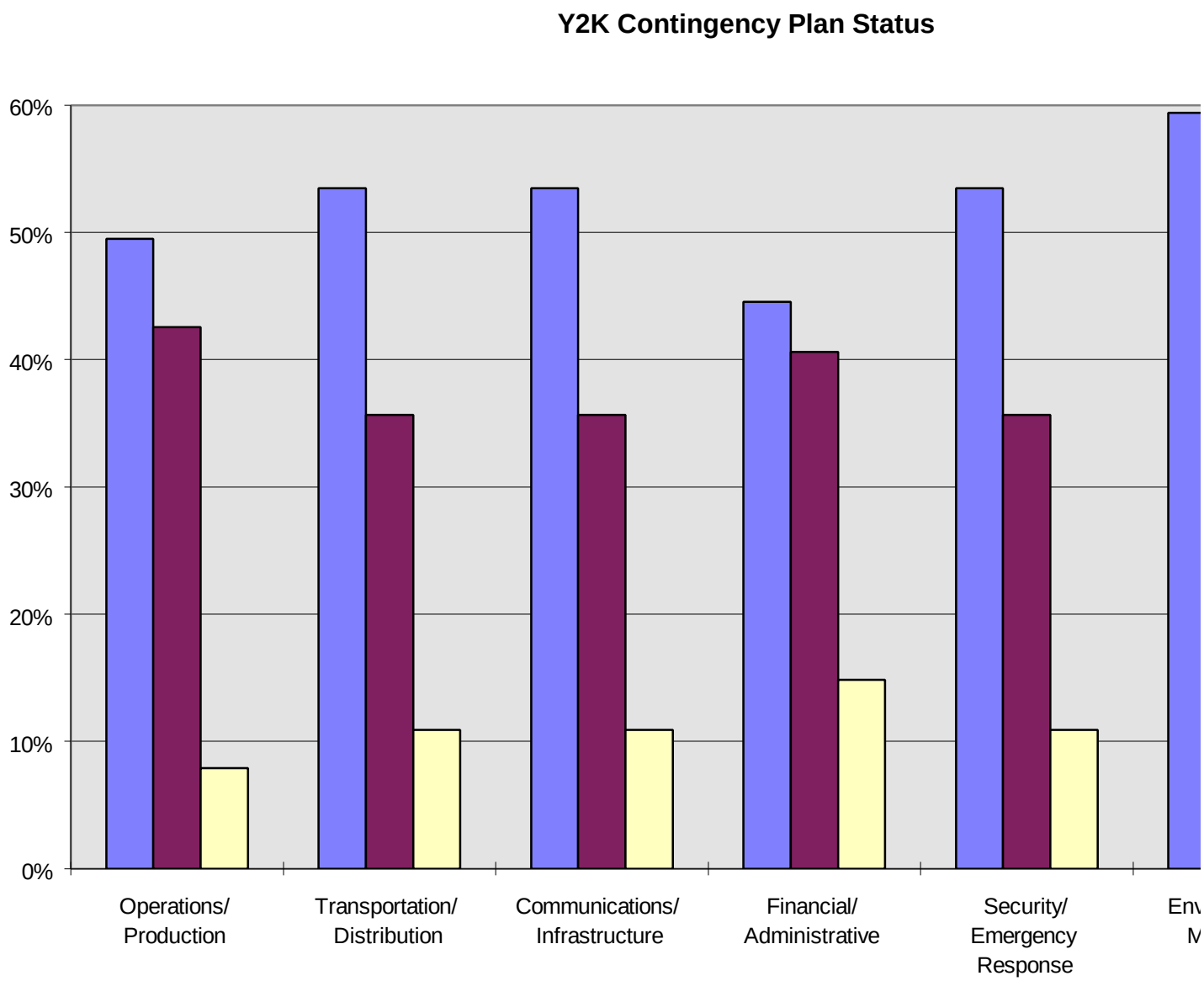
Natural Gas Operators Affected by the Y2K Bug



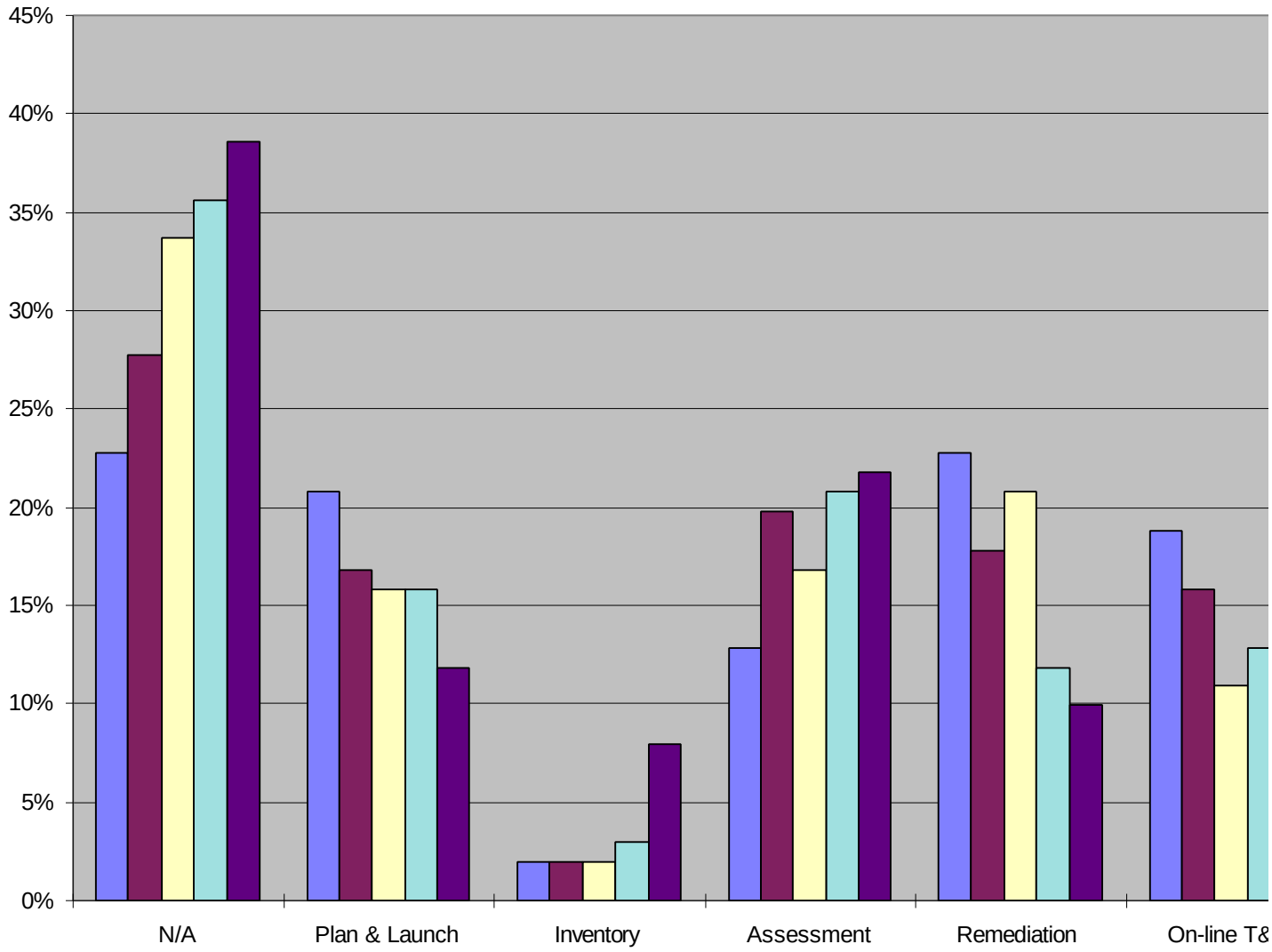

Operators with Comprehensive Plans
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Prioritization
Supporting Infrastructure
Supply Chain
Services
Testing
Coordination Exercises

Length of Time Issue has been Addressed




Y2K Contingency Plan Status
60%
50%
40%
30%
20%
10%
0%
Operations/ Production
Transportation/ Distribution
Communications/ Infrastructure
Financial/ Administrative
Security/ Emergency Response

Y2K Contingency Plan Status



	YES	NO	N/A	TOTAL
A.1. Survey Applicability	**101**	70		171
	YES	**NO**		**TOTAL**
A.1. Survey Applicability	**59%**	41%		100%

A.2. Year 2000 Action Plan	**YES**	**NO**	**N/A**	**TOTAL**
Prioritization	71	19	11	**101**
Supporting Infrastructure	58	20	23	**101**
Supply Chain	60	33	8	**101**
Services	52	31	18	**101**
Testing	80	18	3	**101**
Coordination Exercises	42	33	26	**101**
Communications Program	69	18	14	**101**
A.2. Year 2000 Action Plan	**YES**	**NO**	**N/A**	**TOTAL**
Prioritization	70%	19%	11%	**100%**
Supporting Infrastructure	57%	20%	23%	**100%**
Supply Chain	59%	33%	8%	**100%**
Services	51%	31%	18%	**100%**
Testing	79%	18%	3%	**100%**
Coordination Exercises	42%	33%	26%	**100%**
Communications Program	68%	18%	14%	**100%**

B.2. Issue Longevity	**5 yrs**	**2 yrs**	**1 yrs**	**< 6 mos.**	**Not started**	**No response**	**Total**
Software	5	29	22	22	5	18	**101**
Firmware	2	21	19	30	10	19	**101**
Supply Chain	0	11	22	30	9	29	**101**
Contingency Planning	0	17	15	32	9	28	**101**
B.2. Issue Longevity	**5 yrs**	**2 yrs**	**1 yrs**	**< 6 mos.**	**Not started**	**No response**	**Total**
Software	5%	29%	22%	22%	5%	18%	**100%**
Firmware	2%	21%	19%	30%	10%	19%	**100%**
Supply Chain	0%	11%	22%	30%	9%	29%	**100%**
Contingency Plan	0%	17%	15%	32%	9%	28%	**100%**

B.3. Stage and Status	**N/A**	**Developing**	**Completed**	**Total**
Operations/ Production	50	43	8	**101**
Transportation/ Distribution	54	36	11	**101**
Communications/ Infrastructure	54	36	11	**101**
Financial/ Administrative	45	41	15	**101**
Security/ Emergency Response	54	36	11	**101**
Environmental Monitoring	60	28	13	**101**
B.3. Stage and Status	**N/A**	**Developing**	**Completed**	**Total**
Operations/ Production	50%	43%	8%	**100%**
Transportation/ Distribution	53%	36%	11%	**100%**
Communications/ Infrastructure	53%	36%	11%	**100%**
Financial/ Administrative	45%	41%	15%	**100%**
Security/ Emergency Response	53%	36%	11%	**100%**
Environmental Monitoring	59%	28%	13%	**100%**

B.4. Functionality Status	**N/A**	**Plan & Launch**	**Inventory**	**Assessment**	**Remediation**	**On-line T&M**	**Total**
Software Systems	23	21	2	13	23	19	**101**
Firmware	28	17	2	20	18	16	**101**
Financial/Admin.	34	16	2	17	21	11	**101**
Operations	36	16	3	21	12	13	**101**
Interfaces	39	12	8	22	10	10	**101**
B.4. Functionality Status	**N/A**	**Plan & Launch**	**Inventory**	**Assessment**	**Remediation**	**On-line T&M**	**Total**
Software Systems	23%	21%	2%	13%	23%	19%	**100%**
Firmware	28%	17%	2%	20%	18%	16%	**100%**
Financial/Admin.	34%	16%	2%	17%	21%	11%	**100%**
Operations	36%	16%	3%	21%	12%	13%	**100%**
Interfaces	39%	12%	8%	22%	10%	10%	**100%**